CLAIMS

What is claimed is:

1. An apparatus comprising:

a first compensation device compensating for a wavelength dispersion characteristic dependent on wavelength; and

a second compensation device compensating for wavelength dispersion, the second compensation device having a constant wavelength dispersion characteristic over a plurality of wavelengths.

2. An apparatus as in claim 1, further comprising:

a housing which houses, and thereby encloses, both the both first and second compensation devices.

3. An apparatus as in claim 1, further comprising:

a substrate on which both the first and second compensation devices are fixed.

4. An apparatus as in claim 2, further comprising:

a substrate on which both the first and second compensation devices are fixed.

5. An apparatus as in claim 1, wherein

an input light is input to the apparatus, the input light being a wavelength division multiplexed (WDM) light including a plurality of signal lights at different wavelengths multiplexed together, and

the first and second compensation devices compensate a wavelength range of the input light.

6. An apparatus as in claim 2, wherein

an input light is input to the apparatus, the input light being a wavelength division multiplexed (WDM) light including a plurality of signal lights at different wavelengths multiplexed together, and

the first and second compensation devices compensate a wavelength range of the input light.

7. An apparatus as in claim 3, wherein

an input light is input to the apparatus, the input light being a wavelength division multiplexed (WDM) light including a plurality of signal lights at different wavelengths multiplexed together, and

the first and second compensation devices compensate a wavelength range of the input light.

8. An apparatus as in claim 4, wherein

an input light is input to the apparatus, the input light being a wavelength division multiplexed (WDM) light including a plurality of signal lights at different wavelengths multiplexed together, and

the first and second compensation devices compensate a wavelength range of the input light.

9. An apparatus as in claim 1, wherein an amount of compensation of the first compensation device and an amount of compensation of the second compensation device are set so that a sum of compensation provided by the first and second compensation devices is substantially equal to an amount of dispersion of an

optical transmission line for which the first and second compensation devices provide compensation.

10. An apparatus as in claim 5, wherein an amount of compensation of the first compensation device and an amount of compensation of the second compensation device are set so that a sum of compensation provided by the first and second compensation devices is substantially equal to an amount of dispersion of an optical transmission line for which the first and second compensation devices provide compensation.

11. An apparatus as in claim 1, wherein the first compensation device is a dispersion compensating fiber and the second compensation device is a virtually imaged phased array (VIPA) type dispersion compensator.

12. An apparatus as in claim 1, wherein the second compensation device is a virtually imaged phased array (VIPA) type dispersion compensator.

13. An apparatus comprising:

first means for compensating for a wavelength dispersion characteristic dependent on wavelength; and

second means for compensating for wavelength dispersion, the second means having a constant wavelength dispersion characteristic over a plurality of wavelengths.

14. An apparatus comprising:

a first compensation device compensating for a wavelength dispersion characteristic dependent on wavelength; and

a second compensation device compensating for wavelength dispersion, the second compensation device having a variable wavelength dispersion characteristic.

15. An apparatus as in claim 14, further comprising:

a housing which houses, and thereby encloses, both the both first and second compensation devices.

16. An apparatus as in claim 14, further comprising:

a substrate on which both the first and second compensation devices are fixed.

17. An apparatus as in claim 15, further comprising:

a substrate on which both the first and second compensation devices are fixed.

18. An apparatus as in claim 14, wherein

an input light is input to the apparatus, the input light being a wavelength division multiplexed (WDM) light including a plurality of signal lights at different wavelengths multiplexed together, and

the first and second compensation devices compensate a wavelength range of the input light.

19. An apparatus as in claim 15, wherein

an input light is input to the apparatus, the input light being a wavelength division multiplexed (WDM) light including a plurality of signal lights at different wavelengths multiplexed together, and

the first and second compensation devices compensate a wavelength range of the input light.

20. An apparatus as in claim 16,

an input light is input to the apparatus, the input light being a wavelength division multiplexed (WDM) light including a plurality of signal lights at different wavelengths multiplexed together, and

the first and second compensation devices compensate a wavelength range of the input light.

21. An apparatus as in claim 17, wherein

an input light is input to the apparatus, the input light being a wavelength division multiplexed (WDM) light including a plurality of signal lights at different wavelengths multiplexed together, and

the first and second compensation devices compensate a wavelength range of the input light.

22. An apparatus as in claim 14, wherein an amount of compensation of the first compensation device and an amount of compensation of the second compensation device are set so that a sum of compensation provided by the first and second compensation devices is substantially equal to an amount of dispersion of an optical transmission line for which the first and second compensation devices provide compensation.

23. An apparatus as in claim 18, wherein an amount of compensation of the first compensation device and an amount of compensation of the second compensation device are set so that a

sum of compensation provided by the first and second compensation devices is substantially equal to an amount of dispersion of an optical transmission line for which the first and second compensation devices provide compensation.

24. An apparatus as in claim 14, wherein the first compensation device is a dispersion compensating fiber and the second compensation device is a virtually imaged phased array (VIPA) type dispersion compensator.

25. An apparatus as in claim 14, wherein the second compensation device is a virtually imaged phased array (VIPA) type dispersion compensator.

26. An apparatus comprising:

first means for compensating for dispersion slope of an optical transmission line, the first means having a wavelength dispersion characteristic dependent on wavelength; and

second means for compensating for wavelength dispersion of the optical transmission line, the second means having a variable wavelength dispersion characteristic.

27. An apparatus comprising:

a fiber type compensation device compensating for wavelength dispersion and dispersion slope of an optical transmission line; and

a virtually imaged phased array (VIPA) type compensation device compensating for a sum of the wavelength dispersion of the optical transmission line and the wavelength dispersion compensation of the fiber type compensation device.

28. An apparatus as in claim 27, wherein said sum indicates negative wavelength dispersion, and the VIPA type compensation device has positive wavelength dispersion which cancels at least a part of the negative wavelength dispersion.

29. An apparatus as in claim 27, further comprising:

a housing which houses, and thereby encloses, both the fiber type compensation device and the VIPA type compensation device.

30. An apparatus as in claim 27, further comprising:

a substrate on which both the fiber type compensation device and the VIPA type compensation device are fixed.

31. An apparatus as in claim 28, further comprising:

a substrate on which both the fiber type compensation device and the VIPA type compensation device are fixed.

32. An apparatus as in claim 27, wherein

an input light travels through the optical transmission line, the input light being a wavelength division multiplexed (WDM) light including a plurality of signal lights at different wavelengths multiplexed together, and

the fiber type compensation device and the VIPA type compensation device compensate a wavelength range of the input light.

33. An apparatus as in claim 28, wherein

an input light travels through the optical transmission line, the input light being a wavelength division multiplexed

(WDM) light including a plurality of signal lights at different wavelengths multiplexed together, and

the fiber type compensation device and the VIPA type compensation device compensate a wavelength range of the input light.

34. An apparatus as in claim 29, wherein

an input light travels through the optical transmission line, the input light being a wavelength division multiplexed (WDM) light including a plurality of signal lights at different wavelengths multiplexed together, and

the fiber type compensation device and the VIPA type compensation device compensate a wavelength range of the input light.

35. An apparatus as in claim 30, wherein

an input light travels through the optical transmission line, the input light being a wavelength division multiplexed (WDM) light including a plurality of signal lights at different wavelengths multiplexed together, and

the fiber type compensation device and the VIPA type compensation device compensate a wavelength range of the input light.

36. An optical transmission system comprising:

an optical transmission line;

a first compensation device compensating for dispersion slope of the optical transmission line, the first compensation device having a wavelength dispersion characteristic dependent on wavelength; and

a second compensation device compensating for wavelength dispersion of the optical transmission line, the second compensation device having a constant wavelength dispersion characteristic over a plurality of wavelengths.

37. An apparatus as in claim 36, further comprising:

a housing which houses, and thereby encloses, both the both first and second compensation devices.

38. An apparatus as in claim 36, further comprising:

a substrate on which both the first and second compensation devices are fixed.

39. An apparatus as in claim 37, further comprising:

a substrate on which both the first and second compensation devices are fixed.

40. An apparatus as in claim 36, wherein

an input light travels through the optical transmission line, the input light being a wavelength division multiplexed (WDM) light including a plurality of signal lights at different wavelengths multiplexed together, and

the first and second compensation devices compensate a wavelength range of the input light.

41. An apparatus as in claim 38, wherein

an input light travels through the optical transmission line, the input light being a wavelength division multiplexed (WDM) light including a plurality of signal lights at different wavelengths multiplexed together, and

the first and second compensation devices compensate a wavelength range of the input light.

42. An apparatus as in claim 39, wherein

an input light travels through the optical transmission line, the input light being a wavelength division multiplexed (WDM) light including a plurality of signal lights at different wavelengths multiplexed together, and

the first and second compensation devices compensate a wavelength range of the input light.

43. An apparatus as in claim 36, wherein an amount of compensation of the first compensation device and an amount of compensation of the second compensation device are set so that a sum of compensation provided by the first and second compensation devices is substantially equal to an amount of dispersion of the optical transmission line.

44. An apparatus as in claim 37, wherein an amount of compensation of the first compensation device and an amount of compensation of the second compensation device are set so that a sum of compensation provided by the first and second compensation devices is substantially equal to an amount of dispersion of the optical transmission line.

45. An apparatus as in claim 36, wherein the first compensation device is a dispersion compensating fiber and the second compensation device is a virtually imaged phased array (VIPA) type dispersion compensator.

46. An apparatus as in claim 36, wherein the second compensation device is a virtually imaged phased array (VIPA) type dispersion compensator.

47. An apparatus as in claim 37, wherein the second compensation device is a virtually imaged phased array (VIPA) type dispersion compensator.

48. An apparatus as in claim 38, wherein the second compensation device is a virtually imaged phased array (VIPA) type dispersion compensator.

49. An apparatus as in claim 36, further comprising:

a transmission device transmitting light to the optical transmission line to travel through the optical transmission line; and

a reception device receiving the light from the optical transmission line.

50. An apparatus as in claim 36, wherein light travels through the optical transmission line, the apparatus further comprising:

a reception device receiving the light from the optical transmission line, the second compensation device being in the reception device.

51. An apparatus as in claim 37, wherein light travels through the optical transmission line, the apparatus further comprising:

a reception device receiving the light from the optical transmission line, the second compensation device being in the reception device.

52. An apparatus as in claim 38, wherein light travels through the optical transmission line, the apparatus further comprising:

a reception device receiving the light from the optical transmission line, the second compensation device being in the reception device.

53. An apparatus as in claim 39, wherein light travels through the optical transmission line, the apparatus further comprising:

a reception device receiving the light from the optical transmission line, the second compensation device being in the reception device.

54. An apparatus as in claim 40, further comprising:

a reception device receiving the input light from the optical transmission line, the second compensation device being in the reception device.

55. An apparatus as in claim 41, further comprising:

a reception device receiving the input light from the optical transmission line, the second compensation device being in the reception device.

56. An apparatus as in claim 42, further comprising:

a reception device receiving the input light from the optical transmission line, the second compensation device being in the reception device.

57. An apparatus as in claim 43, wherein light travels through the optical transmission line, the apparatus further comprising:

a reception device receiving the light from the optical transmission line, the second compensation device being in the reception device.

58. An apparatus as in claim 44, wherein light travels through the optical transmission line, the apparatus further comprising:

a reception device receiving the light from the optical transmission line, the second compensation device being in the reception device.

59. An apparatus as in claim 45, wherein light travels through the optical transmission line, the apparatus further comprising:

a reception device receiving the light from the optical transmission line, the second compensation device being in the reception device.

60. An apparatus as in claim 46, wherein light travels through the optical transmission line, the apparatus further comprising:

a reception device receiving the light from the optical transmission line, the second compensation device being in the reception device.

61. An apparatus as in claim 47, wherein light travels through the optical transmission line, the apparatus further comprising:

a reception device receiving the light from the optical transmission line, the second compensation device being in the reception device.

62. An apparatus as in claim 48, wherein light travels through the optical transmission line, the apparatus further comprising:

a reception device receiving the light from the optical transmission line, the second compensation device being in the reception device.

63. An optical transmission system comprising:

an optical transmission line;

a first compensation device compensating for dispersion slope of the optical transmission line, the first compensation device having a wavelength dispersion characteristic dependent on wavelength; and

a second compensation device compensating for wavelength dispersion of the optical transmission line, the second compensation device having a variable wavelength dispersion characteristic.

64. An apparatus as in claim 63, further comprising:

a housing which houses, and thereby encloses, both the both first and second compensation devices.

65. An apparatus as in claim 63, further comprising:

a substrate on which both the first and second compensation devices are fixed.

66. An apparatus as in claim 64, further comprising:

a substrate on which both the first and second compensation devices are fixed.

67. An apparatus as in claim 63, wherein

an input light travels through the optical transmission line, the input light being a wavelength division multiplexed (WDM) light including a plurality of signal lights at different wavelengths multiplexed together, and

the first and second compensation devices compensate a wavelength range of the input light.

68. An apparatus as in claim 64, wherein

an input light travels through the optical transmission line, the input light being a wavelength division multiplexed (WDM) light including a plurality of signal lights at different wavelengths multiplexed together, and

the first and second compensation devices compensate a wavelength range of the input light.

69. An apparatus as in claim 65, wherein

an input light travels through the optical transmission line, the input light being a wavelength division multiplexed

(WDM) light including a plurality of signal lights at different wavelengths multiplexed together, and

the first and second compensation devices compensate a wavelength range of the input light.

70. An apparatus as in claim 63, wherein an amount of compensation of the first compensation device and an amount of compensation of the second compensation device are set so that a sum of compensation provided by the first and second compensation devices is substantially equal to an amount of dispersion of the optical transmission line.

71. An apparatus as in claim 64, wherein an amount of compensation of the first compensation device and an amount of compensation of the second compensation device are set so that a sum of compensation provided by the first and second compensation devices is substantially equal to an amount of dispersion of the optical transmission line.

72. An apparatus as in claim 63, wherein the first compensation device is a dispersion compensating fiber and the second compensation device is a virtually imaged phased array (VIPA) type dispersion compensator.

73. An apparatus as in claim 63, wherein the second compensation device is a virtually imaged phased array (VIPA) type dispersion compensator.

74. An apparatus as in claim 64, wherein the second compensation device is a virtually imaged phased array (VIPA) type dispersion compensator.

75. An apparatus as in claim 65, wherein the second compensation device is a virtually imaged phased array (VIPA) type dispersion compensator.

76. An apparatus as in claim 63, further comprising:

a transmission device transmitting light to the optical transmission line to travel through the optical transmission line; and

a reception device receiving the light from the optical transmission line.

77. An apparatus as in claim 63, wherein light travels through the optical transmission line, the apparatus further comprising:

a reception device receiving the light from the optical transmission line, the second compensation device being in the reception device.

78. An apparatus as in claim 64, wherein light travels through the optical transmission line, the apparatus further comprising:

a reception device receiving the light from the optical transmission line, the second compensation device being in the reception device.

79. An apparatus as in claim 65, wherein light travels through the optical transmission line, the apparatus further comprising:

a reception device receiving the light from the optical transmission line, the second compensation device being in the reception device.

80. An apparatus as in claim 66, wherein light travels through the optical transmission line, the apparatus further comprising:

a reception device receiving the light from the optical transmission line, the second compensation device being in the reception device.

81. An apparatus as in claim 67, further comprising:

a reception device receiving the input light from the optical transmission line, the second compensation device being in the reception device.

82. An apparatus as in claim 68, further comprising:

a reception device receiving the input light from the optical transmission line, the second compensation device being in the reception device.

83. An apparatus as in claim 69, further comprising:

a reception device receiving the input light from the optical transmission line, the second compensation device being in the reception device.

84. An apparatus as in claim 70, wherein light travels through the optical transmission line, the apparatus further comprising:

a reception device receiving the light from the optical transmission line, the second compensation device being in the reception device.

85. An apparatus as in claim 71, wherein light travels through the optical transmission line, the apparatus further comprising:

a reception device receiving the light from the optical transmission line, the second compensation device being in the reception device.

86. An apparatus as in claim 72, wherein light travels through the optical transmission line, the apparatus further comprising:

a reception device receiving the light from the optical transmission line, the second compensation device being in the reception device.

87. An apparatus as in claim 73, wherein light travels through the optical transmission line, the apparatus further comprising:

a reception device receiving the light from the optical transmission line, the second compensation device being in the reception device.

88. An apparatus as in claim 74, wherein light travels through the optical transmission line, the apparatus further comprising:

a reception device receiving the light from the optical transmission line, the second compensation device being in the reception device.

89. An apparatus as in claim 75, wherein light travels through the optical transmission line, the apparatus further comprising:

a reception device receiving the light from the optical transmission line, the second compensation device being in the reception device.

90. A method comprising:

compensating for dispersion slope of a wavelength dispersion characteristic dependent on wavelength; and

compensating for wavelength dispersion of a constant wavelength dispersion characteristic over a plurality of wavelengths.

91. A method comprising:

compensating for dispersion slope of a wavelength dispersion characteristic dependent on wavelength; and

compensating for wavelength dispersion of a variable wavelength dispersion characteristic.